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EXAMINER

BUEKER, RICHARD R

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/622,340	Applicant(s) SASAKI ET AL.	
	Examiner Richard Bueker	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Claims 2-4, 6, 9, 12-14, 16, 19, 22-24, 26 and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2, the phrase "a circumference whose center places said discharging means except for a range in angles of $\pm 10^\circ$ of upper side with respect to the vertical direction" is non-idiomatic, vague and indefinite. "Circumference" is defined as "periphery" and does not necessarily have a center, and the phrase "whose center" thus lacks proper antecedent basis. The claim should define the recited circumference as having a center. Also, "of upper side" is non-idiomatic and lacks proper antecedent basis, and raises the question of "upper side of what?". Also, it is non-idiomatic and incorrect to state that the "center places said discharging means" because the recited center does not and cannot carry out the recited action of placing the discharging means. Also, the phrase "except for a range in angles of $\pm 10^\circ$ of upper side" is non-idiomatic and unclear. Also, the use of the phrase "with respect to" in "with respect to the vertical direction" fails to make clear the intended relationship between the discharging means and the vertical direction.

In claim 12, the phrase "a circumference whose center places said discharging means except for a range in angles of $\pm 30^\circ$ of lower side with respect to the vertical direction" is non-idiomatic, vague and indefinite. "Circumference" is defined as "periphery" and does not necessarily have a center, and the phrase "whose center" thus lacks proper antecedent basis. The claim should define the recited circumference as having a center. Also, "of lower side" is non-idiomatic and lacks proper antecedent

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basis, and raises the question of "lower side of what?". Also, it is non-idiomatic and incorrect to state that the "center places said discharging means" because the recited center does not and cannot carry out the recited action of placing the discharging means. Also, the phrase "except for a range in angles of $\pm 30^\circ$ of lower side" is non-idiomatic and unclear. Also, the use of the phrase "with respect to" in "with respect to the vertical direction" fails to make clear the intended relationship between the discharging means and the vertical direction.

In claim 22, the phrase "a circumference whose center places said discharging means within a range in angles from $+80^\circ$ to -60° with respect to a horizontal axis" is non-idiomatic, vague and indefinite. "Circumference" is defined as "periphery" and does not necessarily have a center, and the phrase "whose center" thus lacks proper antecedent basis. The claim should define the recited circumference as having a center. The phrase "within a range in angles" is non-idiomatic and should be changed to "within a range of angles". Also, it is non-idiomatic and incorrect to state that the "center places said discharging means" because the recited center does not and cannot carry out the recited action of placing the discharging means. Also, the use of the phrase "with respect to" in "with respect to the vertical direction" fails to make clear the intended relationship between the discharging means and the vertical direction. Also in claim 22, the phrase "at both opposite sides" lacks proper antecedent basis and is non-idiomatic, vague and indefinite. Also in claim 22, the reference to the vertical axis is unclear, vague and indefinite.

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In each of claims 3, 4, 13, 14, 23 and 24, the phrase “within a range in angles” is non-idiomatic and should be changed to “within a range of angles”. Also in each of claims 3, 4, 13, 14, 23 and 24, the phrase “with respect to a direction” fails to make clear the intended relationship between the step of discharging and the specified direction. Also in each of claims 3, 4, 13, 14, 23 and 24, the phrase “said discharging means discharges the raw material gas within a range in angles” fails to recite that the discharging means discharges the raw material gas “in a direction”. By failing to recite a gas discharging direction this phrase fails to make clear the relationship between the gas discharging step and the recited “range in angles”. It is noted that claim 5 does properly recite “said discharging means discharges the raw material gas in a direction”, and analogous language should be added to claims 3, 4, 13, 14, 23 and 24.

In claims 6, 9, 16, 19, 26 and 29, the phrase “said holding means slides said substrate”, and in claims 9, 19 and 29, the phrase “said holding means turns said substrate . . . while sliding said substrate” are non-idiomatic and not in accordance with applicants’ specification. The specification (see Figs. 15A and 15 B and page 23, lines 9-12 and 19-21) discloses that the drive mechanism 19 slides the substrate holder 20, which is not the same as the claim recitation of the substrate holding means sliding the substrate. Applicants are requested to provide the definition of “slide” that they are using.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-14 and 20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Forrest (5,554,220). Forrest (see Figs. 2, 4 and 5) discloses an OVPD apparatus for forming a thin film made of organic matter comprising a chamber, a substrate holding means in the chamber, means to vaporize an organic raw material and mix it with carrier gas, means to transport the raw material vapor using the carrier gas and discharge means to discharge the transported raw material vapor into the chamber. Also, the substrate is arranged in the chamber facing upward (Fig. 5 of Forrest) or downward (Fig. 2 of Forrest). Regarding the recitation of "apparatus for forming thin film made of an organic matter on a substrate having a mask for separately painting pixels" (emphasis added) in the preamble of claims 1 and 11, it is noted that this is a recitation of intended use of the claimed apparatus, and Forrest's apparatus has an inherent capability of being used

with a substrate having a mask for forming pixels. Regarding claim 6, Forrest's reactor tube 88 (see Fig. 5 and col. 8, lines 24-26) includes a loading chamber at end 120 and the substrate holder 122 on support rod 124 moves in a sliding motion from the loading chamber to the growth position. Regarding claims 7 and 8, Forrest teaches (col. 8, lines 39-42) the step of rotating the substrate holder. Regarding claim 9, the recited step of turning while sliding is a process limitation that is in effect an intended use of the apparatus, which Forrest's apparatus is inherently capable of performing, because Forrest's apparatus is capable of sliding the substrate and is also capable of rotating the substrate. Regarding claim 10, Forrest teaches (col. 9, lines 13-20) the step of cooling the backside of the substrate.

Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forrest (5,554,220) taken in view of Murakami (5,431,738), Miller (6,200,389) and/or Schmitt (5,256,205). Murakami (see Figs. 5-7, for example) discloses a vapor coating apparatus analogous to that of Fig. 5 of Forrest. Murakami's substrate holder rotates the substrate and also slides the substrate. Murakami teaches that by providing the substrate with multiple modes of movement during a vapor coating process, a desirably more uniform coating can be formed. Also, Miller (see Fig. 17 and col. 11, line 1-62) teaches that a substrate holder can slide back and forth on rails to form a more uniform coating in a vapor coating apparatus. Schmitt (Fig. 4) also teaches translation and rotation in combination to improve coating uniformity. It would have been obvious to one skilled in the art to provide the substrate holder of Forrest with sliding means alone or in addition to rotating means because Murakami, Miller and/or Schmitt teach that

sliding the substrate would successfully improve coating uniformity in a vapor deposition apparatus.

Claims 1-14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forrest (5,554,220) taken in view of Shtein I (2003/0087471) and Jurgensen I (WO 01/61071). Jurgensen II (2003/0054099) is an English language equivalent of Jurgensen I (WO 01/61071) and is cited of interest as an English translation of Jurgensen I, and the passages of Jurgensen referred to in this office action are to Jurgensen II (2003/0054099). If, for argument's sake, the claims were considered to require the presence of a substrate having a mask, such would have been obvious in the apparatus of Forrest, because Shtein I (see Figs. 3 and 25 and paragraph 4, for example) and Jurgensen (see paragraph 19) teach that it is desirable to place a mask on a substrate during an OVPD process. It is noted that Shtein's OVPD process is the same as Forrest's OVPD process. Also, Jurgensen's OVPD process uses Forrest's organic coating materials (see paragraph 47 of Jurgensen). It would have been obvious to use a mask in Forrest's OVPD apparatus, because Shtein I and Jurgensen teach that pixels can successfully and desirably be produced by using a mask in an OVPD process of the type taught by Forrest.

Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forrest (5,554,220) taken in view of Murakami (5,431,738), Miller (6,200,389) and/or Schmitt (5,256,205) and in further view of Shtein I (2003/0087471) and Jurgensen I (WO 01/61071). It would have been obvious to use a mask in Forrest's OVPD apparatus, because Shtein I and Jurgensen teach that pixels can successfully and

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desirably be produced by using a mask in an OVPD process. It is also noted that Jurgensen I (WO 01/61071) also teaches (see Fig. 1) that it was known in the prior art to use a conventional vapor deposition apparatus with a showerhead gas distributor to deposit the organic coating materials of Forrest. Jurgensen I makes clear that one skilled in this art would have recognized that it was obvious to use a conventional prior art vapor coating gas distributor (such as Murakami or Miller, for example) for coating substrates with Forrest's coating materials.

Claims 1-30 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shtein II (J. Appl. Phys.). Shtein II (see Figs. 1 and 2) discloses an OVPD apparatus for forming a thin film made of organic matter comprising a chamber, a substrate holding means in the chamber, means to vaporize an organic raw material and mix it with carrier gas, means to transport the raw material vapor using the carrier gas, discharge means to discharge the transported raw material vapor into the chamber. Also, the substrate is arranged in the chamber with its film formation surface parallel to the vertical direction. Also, Shtein teaches (page 1470, col. 2, lines 17-18-26) that OVPD sources can be positioned outside of a reactor tube and transported by carrier gas into the reactor tube.

Regarding the recitation of "apparatus for forming thin film made of an organic matter on a substrate having a mask for separately painting pixels" (emphasis added) in the preamble of claims 1, 11 and 21, it is noted that this is a recitation of intended use of the claimed apparatus, and Shtein's apparatus has an inherent capability of being used with a substrate having a mask for forming pixels. Regarding claim 6, Shtein's reactor tube

includes a loading end and the substrate holder support rod moves in a sliding motion from the loading chamber to the growth position. It is noted in this respect that Shtein's Fig. 2 identifies the substrate holder as a "sliding mount". Regarding claims 7 and 8, Shtein II teaches (page 1473, col. 1, lines 21-23) the step of rotating the substrate holder. Regarding claim 9, the recited step of turning while sliding is a process limitation that is in effect an intended use of the apparatus, which Shtein's apparatus is inherently capable of performing, because Shtein's apparatus is capable of sliding the substrate and is also capable of rotating the substrate. Regarding claim 10, Shtein II teaches (page 1473, col. 1, lines 19-21) the step of cooling the backside of the substrate.

Claims 6, 9, 16, 19, 26 and 29 are rejected under 35 U.S.C. 103(a) as obvious over Shtein II (J. Appl. Phys.) taken in view of taken in view of Murakami (5,431,738), Miller (6,200,389) and/or Schmitt (5,256,205). Murakami (see Figs. 5-7, for example) discloses a vapor coating apparatus analogous to that of Fig. 5 of Forrest. Murakami's substrate holder rotates the substrate and also slides the substrate. Murakami teaches that by providing the substrate with multiple modes of movement during a vapor coating process, a desirably more uniform coating can be formed. Also, Miller (see Fig. 17 and col. 11, line 1-62) teaches that a substrate holder can slide back and forth on rails to form a more uniform coating in a vapor coating apparatus. Schmitt (Fig. 4) also teaches sliding and turning in combination, for the desirable purpose of improving coating uniformity. It would have been obvious to one skilled in the art to provide the substrate holder of Forrest with sliding means alone or in addition to rotating means because

Murakami, Miller and/or Schmitt teach that sliding the substrate would successfully improve coating uniformity in a vapor deposition apparatus.

Claims 1-30 are rejected under 35 U.S.C. 103(a) as obvious over Shtein II (J. Appl. Phys.) taken in view of Okumura (JP 63-299323) and in further view of Shtein I (2003/0087471) and Jurgensen I (WO 01/61071). Regarding the alternative "arrangement in which said organic film formation surface of said substrate is slanted relative to the vertical direction" recited in claims 1-30, Okumura (Fig. 1) is cited for his teaching that it is desirable to arrange a substrate in a vapor coating apparatus such that the film formation surface of said substrate is slanted relative to the vertical direction. Okumura teaches that because of the slanted position, undesirable suspended matter will be less likely to settle on the film formation surface. It would have been obvious to one skilled in the art to apply this teaching to the substrate holder of Shtein for the desirable purpose of preventing particulate contamination to settle on Shtein's substrate surface. Also, if for argument's sake, the claims were considered to require the presence of a substrate having a mask, such would have been obvious in the apparatus of Shtein II, because Shtein I and Jurgensen I teach that it is desirable to place a mask on a substrate during an OVPD process. It would have been obvious to use a mask in the Shtein II OVPD apparatus, because Shtein I and Jurgensen I teach that pixels can successfully and desirably be produced by using a mask in an OVPD process.

Claims 6, 9, 16, 19, 26 and 29 are rejected under 35 U.S.C. 103(a) as obvious over Shtein II (J. Appl. Phys.) taken in view of taken in view of Murakami (5,431,738),

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Miller (6,200,389) and/or Schmitt (5,256,205), and taken in further view of Okumura (JP 63-299323), and in further view of Shtein I (2003/0087471) and Jurgensen I (WO 01/61071). Regarding the alternative "arrangement in which said organic film formation surface of said substrate is slanted relative to the vertical direction" recited in claims 1-30, Okumura (Fig. 1) is cited for his teaching that it is desirable to arrange a substrate in a vapor coating apparatus such that the film formation surface of said substrate is slanted relative to the vertical direction, so that undesirable suspended matter will be less likely to settle on the film formation surface. It would have been obvious to one skilled in the art to apply this teaching to the substrate holder of Shtein II for the desirable purpose of preventing particulate contamination to settle on Shtein's substrate surface. Also, it would have been obvious to provide sliding motion to the substrate as an alternative to, or in addition to rotation in view of the teachings of Murakami, Miller and/or Schmitt. Also, if for argument's sake, the claims were considered to require the presence of a substrate having a mask, such would have been obvious in the apparatus of Shtein II and Jurgensen I, who teach that it is desirable to place a mask on a substrate during an OVPD process.

Claims 11-20 are rejected under 35 U.S.C. 103(a) as obvious over Shtein II (J. Appl. Phys.) or Forrest (5,554,220) taken in view of Kawata (5,445,677) or Kuniyoshi (JP 62-72115) and in further view of Shtein I (2003/0087471) and Jurgensen I (WO 01/61071). Regarding the claim 11 alternative "arrangement in which said organic film formation surface of said substrate faces downward in a vertical direction". Kawata (Fig. 1) and Kuniyoshi (Fig. 1) are cited for their teaching that it is desirable to arrange a

substrate in a vapor coating apparatus such that the film formation surface of said substrate faces downward, so that undesirable particles are less likely to settle on the film formation surface. Kawata and Kuniyoshi also teach that it is desirable to rotate the downwardly facing substrate to improve uniformity of coating. It would have been obvious to one skilled in the art to apply these teachings to the substrate holder of Shtein or Forrest for the desirable purpose of preventing particulate contamination to settle on Shtein's substrate surface and improving uniformity of coating. Also, if for argument's sake, the claims were considered to require the presence of a substrate having a mask, such would have been obvious in the apparatus of Shtein II or Forrest, because Shtein I (2003/0087471) and Jurgensen I teach that it is desirable to place a mask on a substrate during an OVPD process. It would have been obvious to use a mask in the Shtein II or Forrest OVPD apparatus, because Shtein I and Jurgensen I teach that pixels can successfully and desirably be produced by using a mask in an OVPD process.

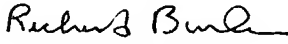
Claims 6, 9, 16, 19, 26 and 29 are rejected under 35 U.S.C. 103(a) as obvious over Shtein II (J. Appl. Phys.) or Forrest (5,554,220) taken in view of Murakami (5,431,738), Miller (6,200,389) and/or Schmitt (5,256,205) and taken in further view of Kawata (5,445,677) or Kuniyoshi (JP 62-72115) and in further view of Shtein I (2003/0087471) and Jurgensen I (WO 01/61071). Regarding the claim 11 alternative "arrangement in which said organic film formation surface of said substrate faces downward in a vertical direction", Kawata (Fig. 1) and Kuniyoshi (Fig. 1) are cited for their teaching that it is desirable to arrange a substrate in a vapor coating apparatus

such that the film formation surface of said substrate faces downward, so that undesirable particles are less likely to settle on the film formation surface. Kawata and Kuniyoshi also teach that it is desirable to rotate the downwardly facing substrate to improve uniformity of coating. It would have been obvious to one skilled in the art to apply these teachings to the substrate holder of Shtein II or Forrest for the desirable purpose of preventing particulate contamination to settle on Shtein's substrate surface and improving uniformity of coating. Also, it would have been obvious to provide sliding motion to the substrate as an alternative to, or in addition to rotation in view of the teachings of Murakami, Miller and/or Schmitt. Also, if for argument's sake, the claims were considered to require the presence of a substrate having a mask, such would have been obvious in the apparatus of Shtein II or Forrest, because Shtein I (2003/0087471) and Jurgensen teach that it is desirable to place a mask on a substrate during an OVPD process. It would have been obvious to use a mask in the Shtein II or Forrest OVPD apparatus, because Shtein I teaches that pixels can successfully and desirably be produced by using a mask in an OVPD process. It is also noted that Jurgensen I (WO 01/61071) also teaches (see Fig. 1) that it was known in the prior art to use a conventional vapor deposition apparatus with a showerhead gas distributor to deposit the organic coating materials of Forrest. Jurgensen I makes clear that one skilled in this art would have recognized that it was obvious to use conventional prior art vapor coating gas distributor (such as in Okumura, Kawata or Kuniyoshi, for example) for coating substrates with Forrest's coating materials.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Richard Bueker
Primary Examiner
Art Unit 1763